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EXAMINER

MOYER, MICHAEL J

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,078

Applicant(s)

HIYAMA ET AL.

Examiner

Michael J. Moyer

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 07 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 07 November 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claims 8-10 and 15** are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim(s) cannot depend from any other multiple dependent claim(s). See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Furthermore, Applicant is advised that should claim 8 be found allowable, claims 9-10 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 and 33-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner has some question regarding the following claims. **As pertaining to claims 1 and 2**, to what does the applicant refer to as a predetermined number of pixels as one block unit? Does one block unit mean the entire matrix of pixels, which then would mean the predetermined number of pixels or does the predetermined number pixels refer to the different regions for displaying the images? The examiner will interpret one block unit to mean a region of the matrix of pixels, which then would mean that the predetermined number of pixels would be the equal to a region of pixels. **As pertaining to claim 4**, what is a definition level? Is it a brightness or resolution or picture

quality or gradation? The examiner will interpret the claim to be understood as either of the previous mentioned above. **As pertaining to claim 33**, the examiner does not understand the meaning of the selection signal level having more than or equal to two values? What is/are the definition of the two values and what is/are they used for? Does the level shifter provide these values?

Claims 3-10 and 34-35 are rejected as being dependent on a rejected base claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Akimoto et al. (hereinafter "Akimoto"), US 6,329,973.

As pertaining to claims 1 and 2, Akimoto teaches image display apparatus for displaying images, figure 3 depicts the image display apparatus in which the matrix display is divided into two different regions. Each region can be construed as one block unit having a predetermined number pixels that is defined within the matrix of 8 rows by 12 columns (col. 5, lines 24-44). Also, Akimoto teaches discriminating an image to be displayed in the block unit between a dynamic or moving image and a still image (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). Furthermore, Akimoto teaches the forming of one screen image for displaying two

different images (information) on two different regions (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3).

As pertaining to claim 3, Akimoto teaches the respective regions can be switched into different regions that are equal to or greater than one block unit (col. 5, lines 24-42; col. 6, lines 11-20). Claim 3 is dependent on claims 1 or 2 and is rejected on the same basis and what is stated above.

As pertaining to claim 5, Akimoto teaches the one screen image is consisted of frames in number less than or equal to number of plurality of pixels forming one block unit and plurality of pixels are selected per frame (col. 2, lines 28-37; col. 5, lines 45-67; col. 6, lines 1-5, 30-38). Claim 5 is dependent on claims 1 or 2 and is rejected on the same basis and what is stated above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto.

As pertaining to claim 4, Akimoto discloses the discriminating of the still image being either gradation, monochromatic color or multicolors (col. 7, lines 6-12). So it would be obvious that Akimoto discloses displaying the plurality of pixels for a still image of low definition level. Claim 4 is dependent on claims 1 or 2 and is rejected on the same basis and what is stated above.

5. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto as applied to claim 1 or 2 above in view of Akiyama, US 5,952,991.

As pertaining to claim 6, Akimoto discloses what has previously been stated above. Also, Akimoto discloses LCD in which a TFT switch is used. It is well known in the art and inherently known that a TFT-LCD will consist of plurality of scanning lines and a plurality of signal lines arranged in a matrix fashion; switches formed at the intersections of scanning and signal lines and is connected to each of the lines; furthermore, opposed electrodes and pixel electrodes connected to switches per plurality of pixels. Furthermore, Akimoto discloses driving waveforms of different levels for displaying information in one region and then displaying different information in another region (col. 4, lines 9-42, 66-67; col. 5, lines 1-65). In addition, Akimoto discloses a plurality of signal lines formed with a plurality of scanning lines in a form of a matrix, a plurality of first switches formed corresponding to the intersection of scanning lines and first signal lines (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2); and a plurality of second switches formed between the second signal lines and first switches (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2).

As pertaining to claim 6, Akimoto does not disclose opposed electrodes and pixel electrodes connected to switches per plurality of pixels. It is well known in the art and inherently known that a TFT-LCD would consist of them.

As pertaining to claim 6, Akiyama does disclose plurality of scanning lines and a plurality of signal lines arranged in a matrix fashion; switches formed at the intersections of scanning and signal lines and is connected to each of the lines; furthermore, opposed electrodes and pixel electrodes connected to switches per plurality of pixels (col. 2, lines 25-67; col. 3, lines 1-24; col. 5, lines 33-57). Furthermore, Akiyama discloses the LCD is able to display moving or dynamic and still or static information on one screen image (col. 15, lines 43-54).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the LCD of Akiyama with the LCD of Akimoto.

The suggestion/motivation for doing so would have been to provide a display that encompasses all of the limitations of claimed invention, even though it is well known in the art and inherently known that TFT-LCD comprises all of the limitations of the claimed invention. Claim 6 is dependent on claims 1 or 2 and is rejected on the same basis and what is stated above.

6. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto as applied to claim 1 or 2 above in view of Shibahara, US 6,104,463.

As pertaining to claim 7, Akimoto discloses what has previously been stated above. Also, Akimoto discloses the forming of one screen image for displaying two different images (information) on two different regions (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). Furthermore, Akimoto discloses the discriminating of the still image being either gradation, monochromatic color or multicolors (col. 7, lines 6-12).

As pertaining to claim 7, Akimoto does not disclose the image display apparatus that has a lighting device, a pair of transparent substrates having a polarizing panel and a liquid crystal layer in between the pair of substrates for applying an electrical field to the liquid crystal layer for controlling orientation for the display in the image and a blinking illustration of the lighting device.

As pertaining to claim 7, Shibahara discloses an image display apparatus that has a lighting device, a pair of transparent substrates having a polarizing panel and a liquid crystal layer in between the pair of substrates for applying an electrical field to the liquid crystal layer for controlling orientation for the display in the image and a blinking illustration of the lighting device

to equalize the chromaticity (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the LCD of Shibahara with the LCD of Akimoto.

The suggestion/motivation for doing so would have been to provide a display that is able to control the chromaticity level and reduce the display nonuniformity. Claim 7 is dependent on claims 1 or 2 and is rejected on the same basis and what is stated above.

7. **Claims 11-12 and 36-38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto in view of Miyoshi, US 6,339,446 B1.

As pertaining to claims 11 and 12, Akimoto discloses an image display apparatus for displaying images, figure 3 depicts the image display apparatus in which the matrix display is divided into two different regions. The matrix can be construed as one block unit having a predetermined number pixels that is defined within the matrix of 8 rows by 12 columns (col. 5, lines 24-44). Also, Akimoto discloses discriminating an image to be displayed in the block unit between a dynamic or moving image and a still image (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). Furthermore, Akimoto discloses the forming of one screen image for displaying two different images (information) on two different regions (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). In addition, as figure 2 depicts, Akimoto discloses a still image memory 6, that can act like a frame memory, a dynamic image/still image discriminating circuit 17, a signal driver 42 and 44; a control signal driver 51 and 52 and pixel selection driver 41 and 43 (col. 3, lines 49-67; col. 4, lines 1-8, 66-67; col. 5, lines 1-23). Additionally, discriminating circuit 17 in conjunction with moving image decoder 3 allows for dynamic information to be displayed in the dynamic region and the discriminating circuit 17 in conjunction with still image memory 6 allows for still information to be displayed in the still region.

As pertaining to claims 11 and 12, Akimoto does not disclose specifically that still image memory 6 is a frame memory having different resolutions.

As pertaining to claims 11 and 12, Miyoshi discloses a device that displays still and moving images simultaneously on a display screen (fig. 3 and 5). Also, Miyoshi discloses separate components for each image, in which frame memories are used (col. 6, lines 6-22, 45-54). Furthermore, Miyoshi discloses the frame memories can be used to control different resolutions (col. 6, lines 55-63).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the frame memory of Miyoshi with the still image memory of Akimoto.

The suggestion/motivation for doing so would have been to provide a better display that is able to incorporate still/static and moving/dynamic information on one screen with different levels of resolution, so as to allow for a better picture, clearer picture etc.

As pertaining to claims 36-38, Akimoto discloses an image display apparatus for displaying images, figure 3 depicts the image display apparatus in which the matrix display is divided into two different regions. The matrix can be construed as one block unit having a predetermined number pixels that is defined within the matrix of 8 rows by 12 columns (col. 5, lines 24-44). Also, Akimoto discloses discriminating an image to be displayed in the block unit between a dynamic or moving image and a still image (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). Furthermore, Akimoto discloses the forming of one screen image for displaying two different images (information) on two different regions (col. 4, lines 9-42, 66-67; col. 5, lines 1-65; fig. 3). In addition, as figure 2 depicts, Akimoto discloses a still image memory 6, that can act like a frame memory, a dynamic image/still image discriminating circuit/control device 17, a signal driver 42 and 44, a control signal driver 51 and 52 and pixel selection driver 41 and 43 (col. 3, lines 49-67; col. 4, lines 1-8, 66-67; col. 5, lines 1-23). Additionally, discriminating circuit

17 in conjunction with moving image decoder 3 allows for dynamic information to be displayed in the dynamic region and the discriminating circuit 17 in conjunction with still image memory 6 allows for still information to be displayed in the still region. Akimoto does not disclose specifically that still image memory 6 is a frame memory having different resolutions. Miyoshi discloses a device that displays still and moving images simultaneously on a display screen (fig. 3 and 5). Also, Miyoshi discloses separate components for each image, in which frame memories are used (col. 6, lines 6-22, 45-54).

8. **Claims 13-14, 17-23, 26-30, 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto and Miyoshi as applied to claim 11 or 12 above, and further in view of Shibahara.

As pertaining to claim 13, Akimoto and Miyoshi disclose what has previously been stated above. Furthermore, Akimoto discloses a first signal line and a second signal line formed with a plurality of scanning lines in a form of a matrix, a plurality of first switches formed corresponding to the intersection of scanning lines and first signal lines (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2); and a plurality of second switches formed between the second signal lines and first switches (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2).

As pertaining to claim 13, they do not disclose a lighting device; a pair of transparent substrates having a polarization panel; a liquid crystal layer disposed between the pair of substrates; an opposed electrode on the substrate; an electric field applied between a pixel electrode and opposed electrode and an image being displayed by controlling orienting condition of liquid crystal.

As pertaining to claim 13, Shibahara discloses a lighting device; a pair of transparent substrates having a polarization panel; a liquid crystal layer disposed between the pair of substrates; an opposed or common electrode on the substrate; an electric field applied between

a pixel electrode and opposed electrode and an image being displayed by controlling orienting condition of liquid crystal (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the LCD of Shibahara with the LCD of Akimoto and Miyoshi.

The suggestion/motivation for doing so would have been to provide a display that encompasses all of the limitations of claimed invention, even though it is well known in the art and inherently known that TFT-LCD comprises all of the limitations of the claimed invention.

As pertaining to claim 14, Shibahara discloses applying a lateral electrical field to the opposed or common electrode and pixel electrode (col. 1, lines 30-39). Claim 14 is dependent on claims 11 or 12 and is rejected on the same basis and what is stated above.

As pertaining to claim 17, Shibahara discloses a lighting device for moving light emitting region in synchronism with a scanning signal applied to the scanning line (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claim 17 is dependent on claim 11 or 12, and 13 and is rejected on the same basis and what is stated above.

As pertaining to claim 18, Akimoto discloses a first signal line and a second signal line formed with a plurality of scanning lines in a form of a matrix, a plurality of first switches formed corresponding to the intersection of scanning lines and first signal lines (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2); and a plurality of second switches formed between the second signal lines and first switches (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2). It would be obvious that they would be formed on different substrates in order for the LCD to operate correctly. Shibahara discloses a lighting device; a pair of transparent substrates having a polarization panel; a liquid crystal layer disposed between the pair of substrates; an opposed or common electrode and pixel electrode connected to the first of second switches; an electric field applied between a

pixel electrode and opposed electrode and an image being displayed by controlling orienting condition of liquid crystal (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claim 18 is dependent on claims 11 or 12 and is rejected on the same basis and what is stated above.

As pertaining to claim 19, Akimoto discloses a first signal line and a second signal line formed with a plurality of scanning lines in a form of a matrix, a plurality of first switches formed corresponding to the intersection of scanning lines and first signal lines (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2); and a plurality of second switches formed between the second signal lines and first switches (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2). Shibahara discloses a lighting device; a pair of transparent substrates having a polarization panel; a liquid crystal layer disposed between the pair of substrates; an opposed or common electrode on one of the substrates and pixel electrode connected to the second switches; an electric field applied between a pixel electrode and opposed electrode and an image being displayed by controlling orienting condition of liquid crystal (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claim 19 is dependent on claims 11 or 12 and is rejected on the same basis and what is stated above.

As pertaining to claims 20-21, Shibahara discloses applying a lateral electrical field to the opposed or common electrode and pixel electrode (col. 1, lines 30-39). Claims 20 and 21 are dependent on claims 11 or 12 and 18 or 19 and are rejected on the same basis and what is stated above.

As pertaining to claims 22-23, Shibahara discloses applying a vertical electrical field to the opposed or common electrode and pixel electrode (col. 1, lines 15-23). Claims 22 and 23 are dependent on claims 11 or 12 and 18 or 19 and are rejected on the same basis and what is stated above.

As pertaining to claims 26-27, Shibahara discloses a lighting device for moving light emitting region in synchronism with a scanning signal applied to the scanning line (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claims 26 and 27 are dependent on claim 11 or 12, and 18 or 19 and are rejected on the same basis and what is stated above.

As pertaining to claim 28, Akimoto discloses a first signal line and a second signal line formed with a plurality of scanning lines in a form of a matrix, a plurality of first switches formed corresponding to the intersection of scanning lines and first signal lines (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2); and a plurality of second switches formed between the second signal lines and first switches (col. 3, lines 49-67; col. 4, lines 1-8; fig. 2). Shibahara discloses a lighting device; a pair of transparent substrates having a polarization panel; a liquid crystal layer disposed between the pair of substrates; an opposed or common electrode on one of the substrates and pixel electrode connected to the switches; an electric field applied between a pixel electrode and opposed electrode and an image being displayed by controlling orienting condition of liquid crystal (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claim 28 is dependent on claims 11 or 12 and is rejected on the same basis and what is stated above.

As pertaining to claim 29, Shibahara discloses applying a lateral electrical field to the opposed or common electrode and pixel electrode (col. 1, lines 30-39). Claim 29 is dependent on claims 11 or 12 and 28 and is rejected on the same basis and what is stated above.

As pertaining to claim 30, Shibahara discloses applying a vertical electrical field to the opposed or common electrode and pixel electrode (col. 1, lines 15-23). Claim 30 is dependent on claims 11 or 12 and 28 and is rejected on the same basis and what is stated above.

As pertaining to claim 32, Shibahara discloses a lighting device for moving light emitting region in synchronism with a scanning signal applied to the scanning line (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10). Claim 32 is dependent on claim 11 or 12, and 28 and is rejected on the same basis and what is stated above.

9. **Claims 16, 24-25 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto, Miyoshi and Shibahara as applied to claim 11 or 12 or 13 or 18 or 19 or 28 above, and further in view of Nakakuki, US 6,160,593.

As pertaining to claims 16, 24-25 and 31 Akimoto, Miyoshi and Shibahara disclose what has previously been stated above. Shibahara does disclose the use of a color filter parallel to the scanning line (col. 4, lines 9-67; col. 5, lines 1-48; col. 7, lines 25-67; col. 8, lines 1-10).

As pertaining to claims 16, 24-25, and 31, they do not disclose the color filter being a stripe structure.

As pertaining to claims 16, 24-25, and 31, Nakakuki disclose the use of a stripe structured color filter (col. 2, lines 9-19).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the stripe structured color filter of Nakakuki with the color filter of Akimoto, Miyoshi and Shibahara.

The suggestion/motivation for doing so would have been to provide a better color filter for displaying higher resolution images. Claims 16, 24, 25 and 31 are dependent on claims 11 or 12, and 13 or 18 or 19 or 28 and are rejected on the same basis and what is stated above.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Kakinuma et al., US 5,721,597. Kakinuma teaches a display element using a liquid crystal substance and image displaying method using the same.

b) Usuba et al., US 4,328,490. Usuba teaches a liquid crystal display device with low battery indication.

c) Asamura et al., US 5,543,845. Asamura teaches a high efficiency encoding apparatus.

d) Shigeta et al., US 6,088,012. Shigeta teaches a half tone display method for a display panel.

e) Hishida, US 6,297,787 B1. Nishida teaches a display device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Michael J. Moyer** whose telephone number is **(703) 305-2099**. The examiner can normally be reached Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steven Saras**, can be reached at **(703) 305-9720**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to: (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

MJM
September 23, 2003


STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Michael J. Moyer
Examiner
Art Unit 2675